ANTHONY J. O'DOWD ET AL.
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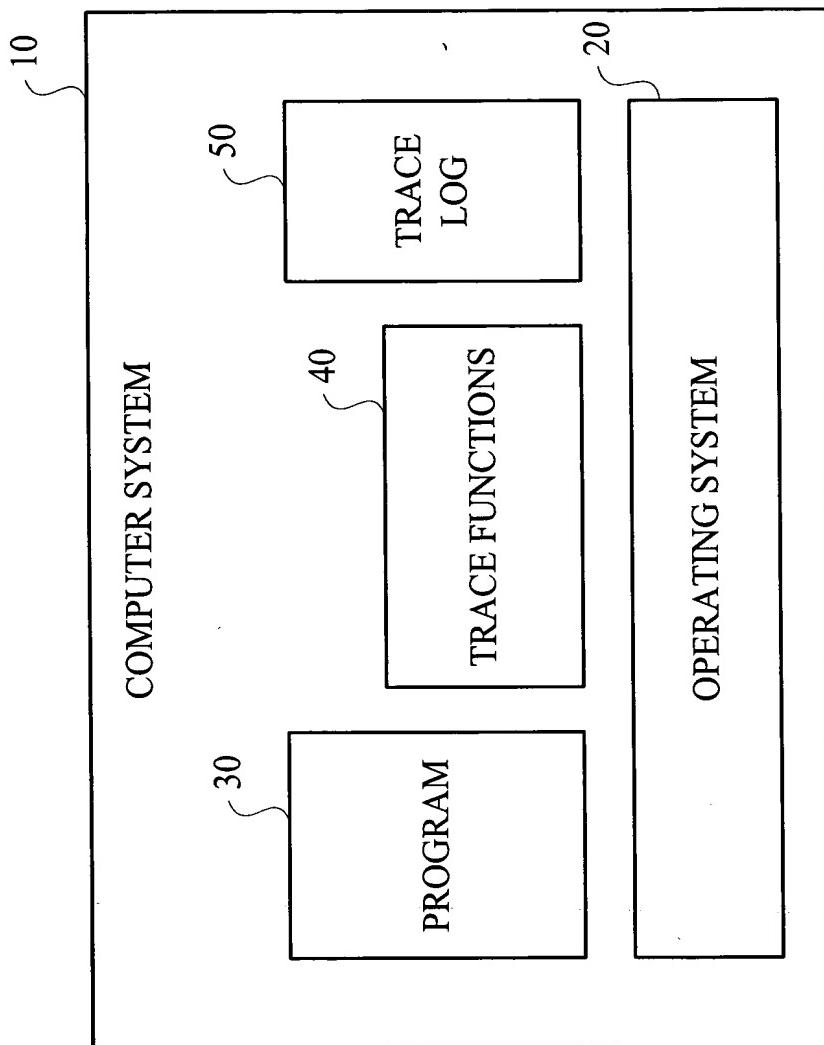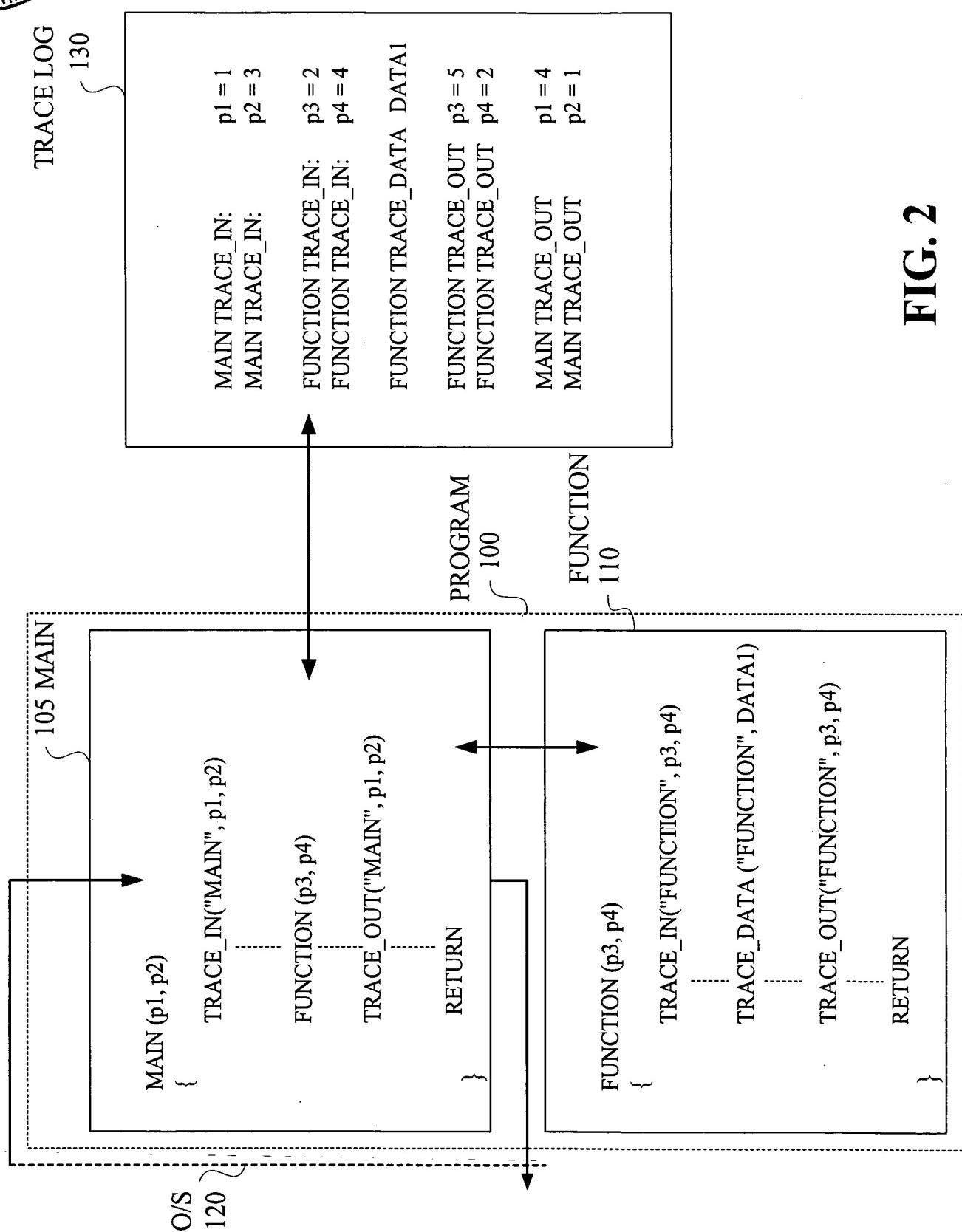COMPUTER SYSTEM
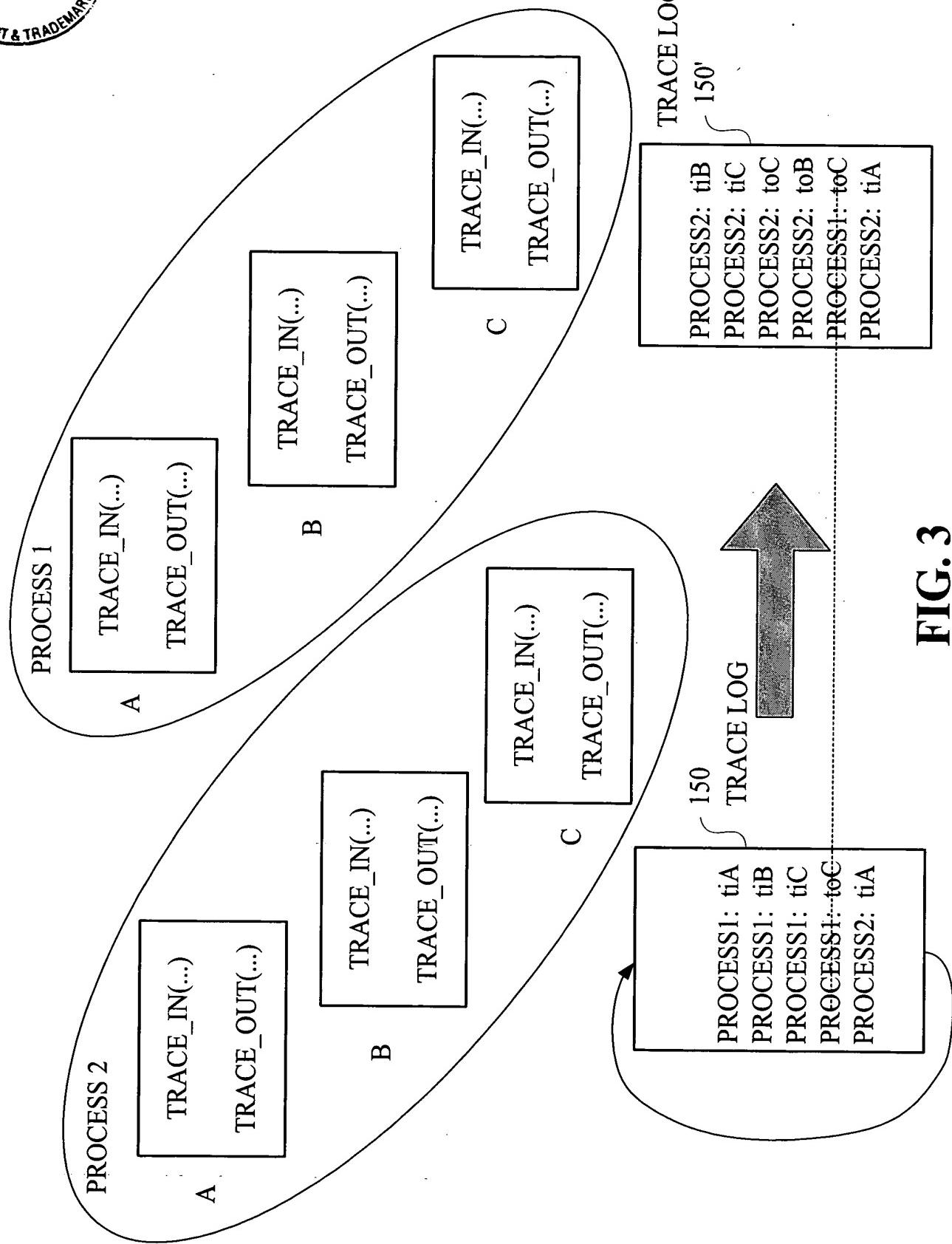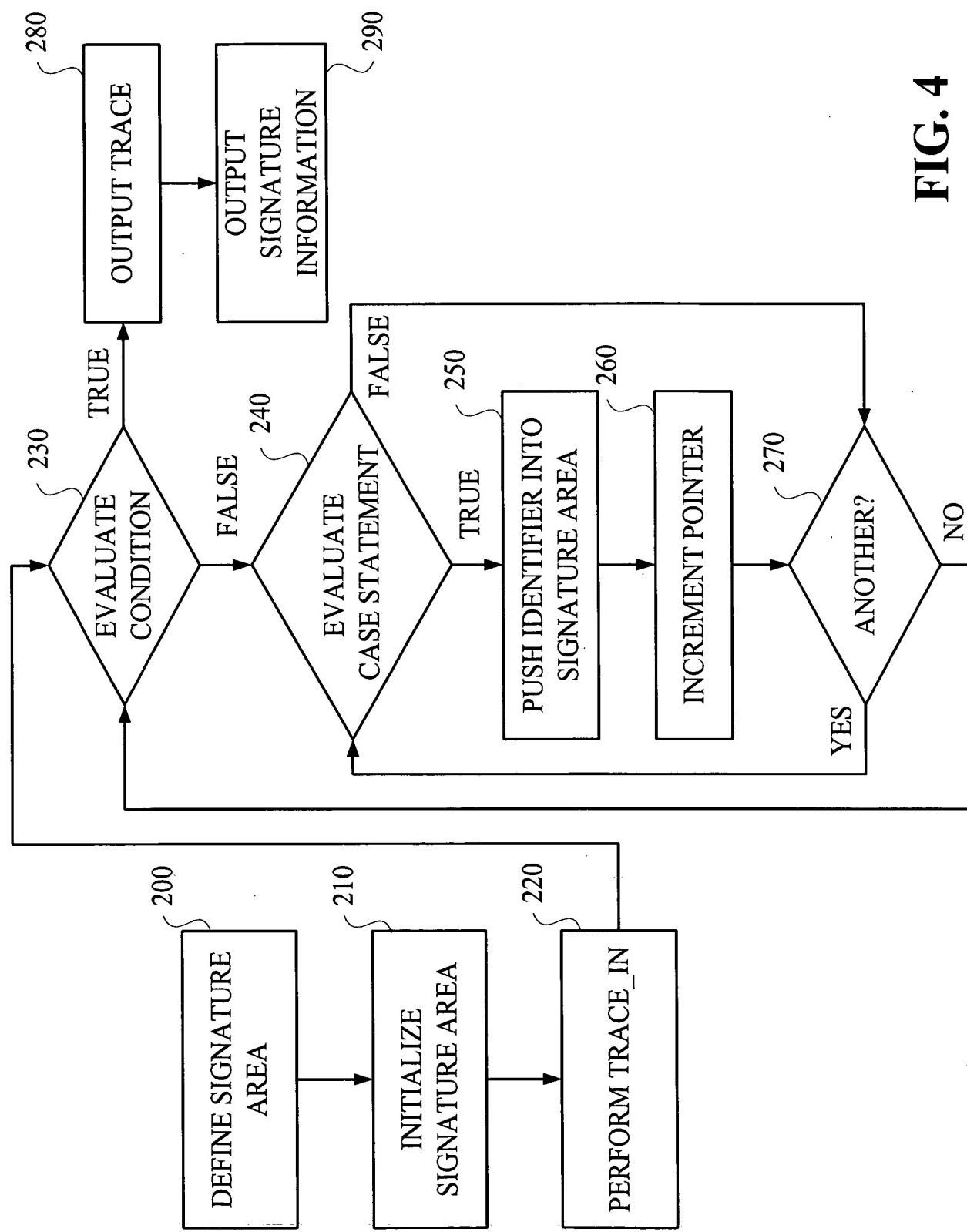
PROGRAM

TRACE FUNCTIONS

TRACE LOG

OPERATING SYSTEM

FIG. 1

FIG. 2

PROCESS 1

A
TRACE_IN(...)
TRACE_OUT(...)

B
TRACE_IN(...)
TRACE_OUT(...)

C
TRACE_IN(...)
TRACE_OUT(...)

PROCESS 2

A
TRACE_IN(...)
TRACE_OUT(...)

B
TRACE_IN(...)
TRACE_OUT(...)

C
TRACE_IN(...)
TRACE_OUT(...)

TRACE LOG
150

PROCESS1: tiA
PROCESS1: tiB
PROCESS1: tiC
PROCESS1: toC
PROCESS2: tiA

TRACE LOG
150'

PROCESS2: tiB
PROCESS2: tiC
PROCESS2: toC
PROCESS2: toB
PROCESS1: toC
PROCESS2: tiA

FIG. 3

280 OUTPUT TRACE

290 OUTPUT SIGNATURE INFORMATION

230 EVALUATE CONDITION

TRUE

FALSE

240 EVALUATE CASE STATEMENT

FALSE

TRUE

250 PUSH IDENTIFIER INTO SIGNATURE AREA

260 INCREMENT POINTER

270 ANOTHER?

YES

NO

200 DEFINE SIGNATURE AREA

210 INITIALIZE SIGNATURE AREA

220 PERFORM TRACE_IN

FIG. 4

SIGNATURE AREA
300

320 POINTER

| 1 | 4 | 2 | 3 | 1 | 2 | | 6 |

330
LAST ELEMENT

310
SIGNATURE POINTS

TEST PROGRAM: TRACE_IN

. . . .

TEST PROGRAM: TRACE_OUT, SIG_AREA

340
TRACE LOG

```
PROC: TEST PROGRAM;

DEFINE SIG_AREA SIZE(8); // DEFINE SIGNATURE AREA

SET SIG_AREA = 0;          // SET AREA EMPTY

TRACE_IN;          // NORMAL INPUT TRACE

REPEAT UNTIL CONDITION = TRUE
                   // ITERATE OVER THE FOLLOWING

    CASE TEST = 1;
    PUSH 1 INTO SIG_AREA
        ...
    CASE TEST = 2;
    PUSH 2 INTO SIG_AREA
        ...
    CASE TEST = 3;
    PUSH 3 INTO SIG_AREA
        ...
    CASE TEST = 4;
    PUSH 4 INTO SIG_AREA
        ...
END REPEAT;          // KEEP ITERATING

TRACE_OUT, SIG_AREA   // NOW INCLUDES SIGNATURE

END;
```
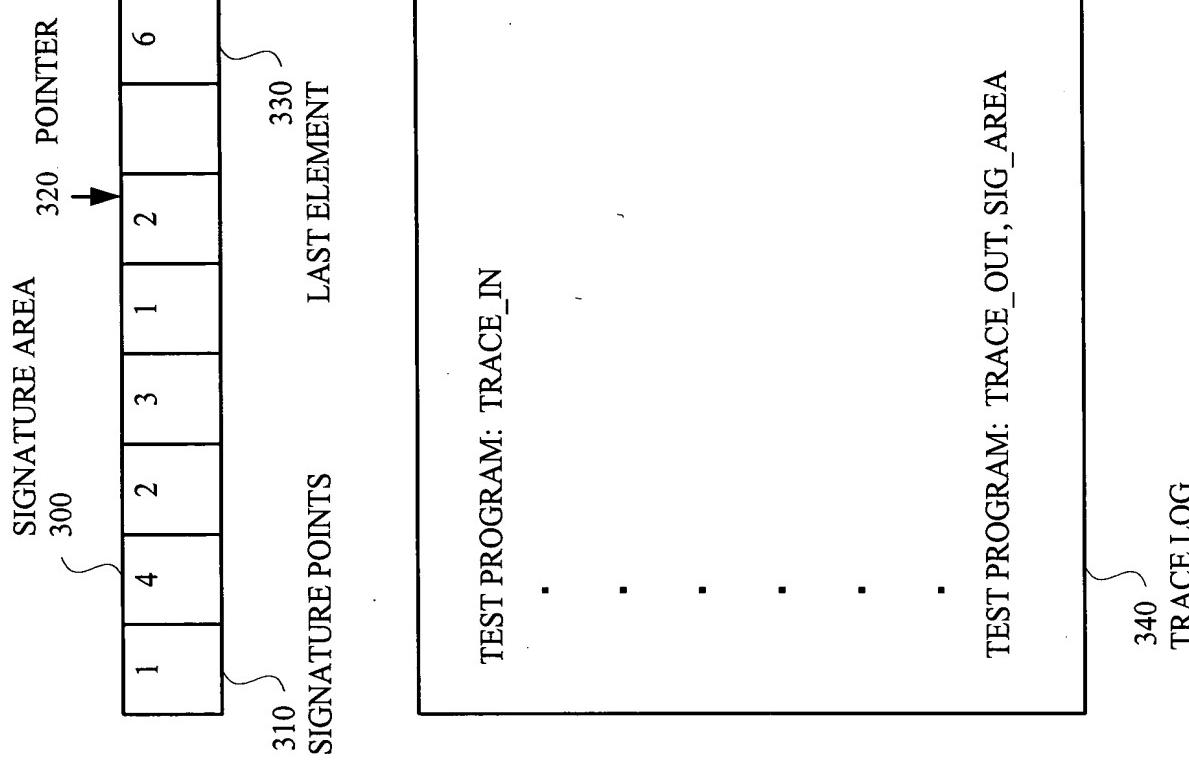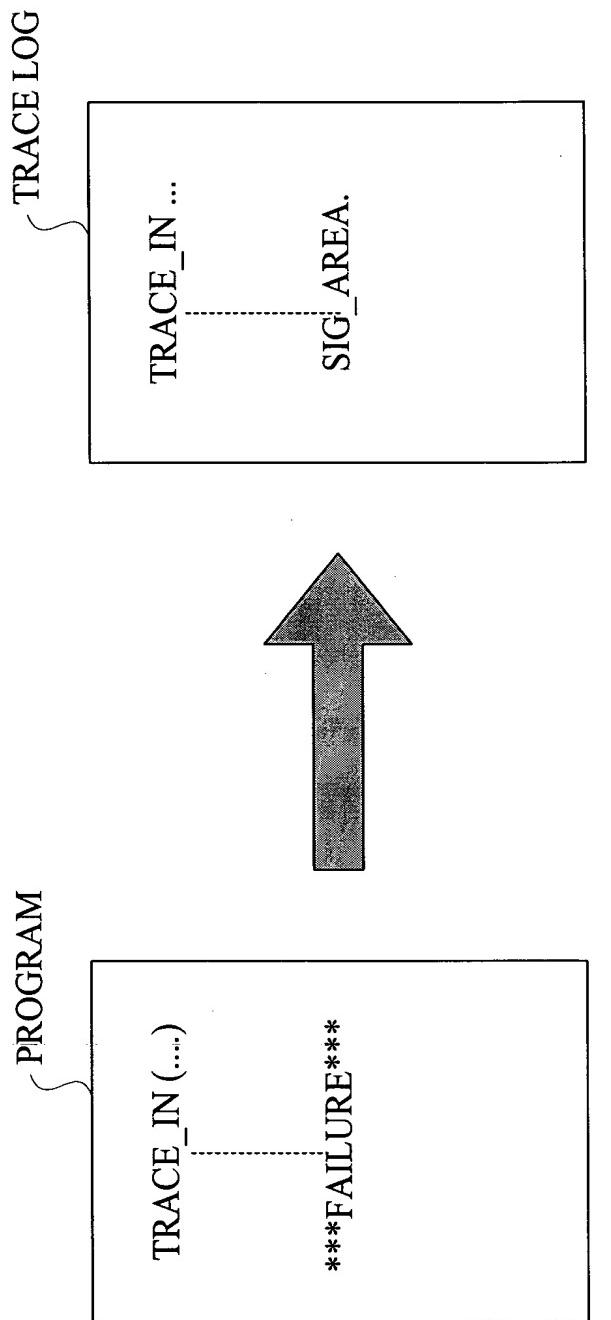
FIG. 5

TRACE LOG

TRACE_IN ...

SIG_AREA.

PROGRAM

TRACE_IN (....)

FAILURE

FIG. 6

FIG. 7